CHEMISTRY FOR MEDICINE CHEM2110
ASSIGNMENT

QUESTION 1 ***(Show your calculations)***

(a) $2.35 \times 10^{-3} + 4.899 \times 10^{-1} + 1.274 \times 10^{-2}$

(b) $(825 + 175)(0.07859 - 0.07359)$

(c) $1.0 \times 10^{3} - 2.0 \times 10^{2}$

(d) $210 + (3.0 \times 10^{1}) + 759$

(e) $200.0\ (0.169 + 2.83 - 2.499)$

(f) $(6.5 \times 10^{-3}) + 0.0085$

(g) $40.0 \text{ mm} \times 45.95 \text{ mm}$

(h) $\dfrac{5.389 - 5.369}{0.04008} \times 100\%$

(i) $\dfrac{0.004495 \times 100.20}{19.3597 - 19.3147}$

(j) $\dfrac{5.04359 - 5.04239}{(9.57 \times 10^{-5} + 4.3 \times 10^{-6}) \times (1.20 \times 10^{-2})}$

(k) $\dfrac{9.42 \times 10^{2} + 8.234 \times 10^{2} + 1.625 \times 10^{3}}{3}$ (3 is exact)

(l) 2 mm + 0.79 cm = _____ cm

(m) 27 ºC = _____ K

(n) $99.96 \text{ m}^2 / 0.0200 \text{ m}^3$

(o) $0.50\ \mu g/\mu m^3$ = _____ $\mu g/\mu m^3$ (***Use dimensional analysis***)

QUESTION 2

A graduated cylinder (measuring cylinder) contains **27 mL** of **water** at 25 ºC and the mass of the water is **26.92 g**. A **sphere** of **iron** with a **diameter** of **18.0 mm** is added to the water in the graduated cylinder. The **total mass** of the water and the iron is **50.92 g**. [*The volume of a sphere is given by the expression:* $\boldsymbol{V = (4/3)\pi r^3}$].

(i) Calculate the **total volume** of the water and the iron in the graduated cylinder.

(ii) Determine the **density of iron** at 25 ºC? *Show your calculations.*

(iii) *Without doing any calculations,* what do you think the **density of 48.00 g of iron** is at the same temperature? Explain your answer.